National Institute of Environmental Health Sciences

Effects of local climate variability on transmission dynamics of cholera in Matlab, Bangladesh

Author(s): Islam MS, Sharker MA, Rheman S, Hossain S, Mahmud ZH, Islam MS, Uddin AM, Yunus M, Osman MS, Ernst R, Rector I, Larson CP, Luby SP, Endtz HP, Cravioto A

Year: 2009

Journal: Transactions of The Royal Society of Tropical Medicine and Hygiene. 103 (11): 1165-1170

Abstract:

Cholera is considered as a model for climate-related infectious diseases. In Bangladesh, cholera epidemics occur during summer and winter seasons, but it is not known how climate variability influences the seasonality of cholera. Therefore, the variability pattern of cholera events was studied in relation to the variation in local climate variables in Matlab, Bangladesh. Classification and regression tree (CART) and principal component analysis (PCA) were used to study the dependency and variability pattern of monthly total cholera cases. An average temperature orEuro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin)23.25 degrees C and sunshine orEuro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin)4.13h/day) and temperature (23.25-28.66 degrees C), the second highest cholera occurrence (44 cases/month) was observed. When the sunshine was >orEuro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin)4.13h/day and the temperature was >28.66 degrees C, the highest cholera occurrence (54 cases/month) was observed. These results demonstrate that in summer and winter seasons in Bangladesh, temperature and sunshine hours compensate each other for higher cholera incidence. The synergistic effect of temperature and sunshine hours provided the highest number of cholera cases.

Source: http://dx.doi.org/10.1016/j.trstmh.2009.04.016

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Food/Water Quality, Meteorological Factors, Precipitation, Solar Radiation, Temperature

Food/Water Quality: Biotoxin/Algal Bloom

Temperature: Fluctuations

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: Other Asian Country

Other Asian Country: Bangladesh

Health Impact:

specification of health effect or disease related to climate change exposure

Infectious Disease, Morbidity/Mortality

Infectious Disease: Foodborne/Waterborne Disease

Foodborne/Waterborne Disease: Cholera

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Time Scale Unspecified